

Appl. No. 10/016,413
Amdt Dated Aug. 9, 2004
Reply to Office Action of May 07, 2004

REMARKS

Applicant appreciates the Examiner's allowance of claims 1-15 and indication of allowabilities of claim 19.

Rejections under 35 U.S.C. 112

Claim 18 is objected to under 35 U.S.C. 112, second paragraph. The language of claim 18 has been changed according to Examiner's suggestion. Removal of this rejection is respectfully requested.

Rejections under 35 U.S.C. 103

Claims 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0081399 to Davis et al in view of USP 5,992,955 to Yang, and USP 6,053,586 to Cook et al. Applicant respectfully traverses this rejection.

Davis et al reference is an unqualified reference of 35 U.S.C. 103(a), because the filing date of the Davis et al reference, i.e., 11/01/01, is later than the priority date of the current application, i.e., 10/12/01. Without the Davis et al reference, the remaining Yang and Cook et al references which were picked by the Examiner after reading claims 16-20, can no longer render obvious the invention as defined in claims 16-20.

(1) The supplemental declaration which claims the priority of foreign filing, (2) the certified copy of the foreign filing, and (3) verification of translation of that certified copy, will be supplemental submitted in few days for completeness of claiming of the priority data. Applicant apologies for any inconveniences to the Examiner derived from this later claiming of the foreign priority after the initial filing.

Reconsideration and allowance of claims 16-20 are respectfully requested,

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based on the aforementioned reasons. In view of the foregoing, the subject application is believed to be in a condition for allowance and an action to such effect is earnestly solicited.

Respectfully submitted,

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TRANSLATION OF THE FOREIGN PRIORITY APPLICATION

Abstract (Name: LOCKING STRUCTURE OF COMPUTER SIDE
PANEL AND TOP PANEL)

A locking structure for a computer side panel and a top panel, includes a computer base, a locking bar, a side panel, a top panel and a spring. A rear plate of the computer base forms a plurality of fixing tabs and a sliding space. An opening and a plurality of locking slots are formed at the sliding space. The locking bar slidably attached in the sliding space via the spring. The locking bar defines a plurality of locking slots corresponding to the locking slots of the sliding space. An arm portion is bent from one end of the locking bar. A blocking section is formed on the arm portion. An operating tab is formed rearwardly from the locking bar for connecting an operating block. A plurality of hooks is formed from the side panel to engage in the locking slots of the locking bar so as to secure the side panel to the base. A catch is formed at the top panel to lock in the blocking section of the locking bar so as to secure the top panel to the base. Thus, apply a force to the operating block can disengage the side panel and the top panel.

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【Field of the Invention】

The present invention relates to a locking structure for a computer top panel and side panel, and more particularly to a structure for readily securing the top panel and side panel.

【Background】

A typical computer enclosure accommodates a number of electronic devices therein. The enclosure needs to be opened on a number of occasions for a variety of reasons. Therefore, the enclosure should be able to be readily opened and subsequently reassembled.

A conventional computer enclosure comprises a base, side panels, and a top panel. A plurality of locking slots is defined in the base. A plurality of locking tabs is formed on the side panels and the top panel, for engagement into the locking slots of the base. Screws are then used to secure the side panels and the top panel to the base. A tool (such as a screwdriver) is required for installation and removal of the screws. This is unduly inconvenient and time-consuming. Examples of the abovementioned mechanisms are disclosed in U.S. Patent No. 5,600,540, and Taiwan Patent Applications Nos. 85211135 and 86213035.

Therefore, an improved computer enclosure is desired to overcome the above-described disadvantages of the related art.

【Objects of the Invention】

An object of the invention is to provide a locking structure which can secure a side panel and a top panel to the enclosure simultaneously, and readily detach the side and top panels.

Another object of the invention is to provide a locking structure which forbids an unauthorized person to open the side and top panels.

【Character of the Invention】

A locking structure for a computer side panel and a top panel, includes a computer base, a locking bar, a side panel, a top panel and a spring. A rear plate of the computer base forms a plurality of fixing tabs and a sliding space. An opening and a plurality of locking slots are formed at the sliding space. The locking bar slidably attached in the sliding space via the spring. The locking bar defines a plurality of locking slots corresponding to the locking slots of the sliding space. An arm portion is bent from one end of the locking bar. A blocking section is formed on the arm portion. An operating tab is formed rearwardly from the locking bar for connecting an operating block. A plurality of hooks is formed from the side panel to engage in the locking slots of the locking bar so as to secure the side panel to the base. A catch is formed at the top panel to lock in the blocking section of the locking bar so at to

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secure the top panel to the base. Thus, apply a force to the operating block can disengage the side panel and the top panel.

【Description of the preferred embodiment】

Referring to Figs. 1-3, a locking structure of the present invention mainly comprises a computer base 10, a locking bar 50, a side panel 80 and a top panel 90.

The base comprises a bottom plate 12, a front plate 14, a rear plate 16, a side plate 18 and a drive bracket 20. A plurality of locking slots (not shown) is defined in one flange of the bottom plate 12 opposing the side plate 18. Two locating holes 21 are defined in the front plate 14. A bent flange 22 is formed from a side edge of the rear plate 16 opposing the side plate 18. A plurality pairs of fixing tabs 24 is formed from the side edge of the rear plate 16 and the bent flange 22. Each pair of the fixing tabs 24 extends toward each other and spaces from each other a certain distance. A sliding space (not labeled) is defined between the fixing tabs 24. An opening 26 and a plurality of locking slots 28 are defined in the sliding space. A locking tab 27 (see Fig. 6) with a locking hole 25 is bent rearwardly from rear plate at the opening 26. A retaining tab 29 is formed at a top portion of the bent flange 22 for hooking the spring 100. A bent flange 30 is formed from a top edge of the rear plate 16, an exposed portion 31 is defined in the bent flange 30 corresponding to the sliding space, two cutouts 32 are defined in the bent flange 30. A bent portion 34 is formed inwardly from a top edge of the side plate 18, a plurality of L-shaped first aperture 36 is defined in a junction of the bent portion 34 and the side plate 18. The drive bracket 20 is disposed at top portions of the front plate 14 and rear plate 16. A sidewall 38 of the drive bracket 20 opposing the side plate 18 has a plurality of locking slots (not shown) defined in a bottom edge thereof. A top edge of the sidewall 38 is bend inwardly to form a bent portion 40, a plurality of L-shaped second apertures 42 is defined in a junction of the sidewall 38 and the bent portion 40.

The locking bar 50 is elongated, and slidably attached in the sliding space of the rear plate 16. A plurality of locking slots 52 is defined in the locking bar 50 corresponding to the locking slots 28 of the rear plate 16. An end of the locking bar 50 forms an arm portion 54 which upwardly forms a blocking section 56 at a center thereof. One side of the blocking section 56 is an orthogonal blocking surface, and the other side is an arch-shaped surface. A connecting tab 62 extends from the locking bar 50 in a same direction with the arm portion 54. A through hole 64 is defined in the connecting tab 62 for connecting the spring 100. An operating tab 66 is bent from the locking bar 50 in an opposite direction with the arm portion 54. A locking hole 68 is defined in the operating tab 66 for

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connecting the operating block 70. A locking hole 72 is defined in the operating block 70 corresponding to the locking hole 25 of the locking tab 27 of the rear plate 16.

A plurality of hooks 82 is formed from a rear edge and two side edges of the side panel 80, corresponding to the locking slots 28 of the rear plate 16 and the locking slots of the bottom plate 12 and the sidewall 38 of the drive bracket 20.

A rim 92 is formed from each of two opposite side edges of the top panel 90. A plurality of L-shaped nubs 94 is formed from the rim 92, corresponding to the first apertures 36 of the side plate 18 and the second apertures 42 of the drive bracket 20. Two locating posts (not shown) are formed from the top panel 90, corresponding to the locating holes 21 of the front plate 14. Two latches 96 are formed from a rear portion of the top panel 90, corresponding to the opening 26 of the rear plate 16. A catch 98 is formed from the rear portion of the top panel 90, corresponding to the exposed portion 31 of the rear panel 16.

Referring to Figs. 4-6, the locking bar 50 is slidably attached to the sliding space of the rear plate 16. The operating tab 66 extends through the opening 26 of the rear plate 16, and is exposed outside the rear plate 16. When the spring 100 is in a normal state, the locking slots 52 of the locking bar 50 is slightly higher than the locking slots 28 of the rear plate 16 (not shown). In assembly, the hooks 82 of the side panel 80 engage in the locking slots of the bottom plate 12 and the sidewall 38 of the drive bracket 20. The hooks 82 are aligned with the locking slots 28 of the base 10. The side panel 80 is then pushed horizontally and forwardly. The hooks 82 of the side panel 80 drive the locking bar 50 to move slightly downwardly, and then are capable to extend through the locking slots 52 of the locking bar 50. The locking bar 50 is then restored to its original position via the restoring force of the spring 100. The side panel 80 is thus secured to the locking bar 50. Then, the locating posts of the top panel 90 are in alignment with the locating holes 42 of the front plate 14, and the nubs 94 of the top panel 90 engage in the first apertures 36 of the side plate 18 and the second apertures 42 of the drive bracket 20. The top panel 90 is pushed horizontally rearwardly, so that the latches 96 engage in the cutouts 32 of the rear plate 16. The catch 98 applies a force on the arch-shaped surface of the arm portion 54 of the locking bar 50 to drive the locking bar 50 downwardly, and then rides over the blocking section 56. The locking bar 50 is restored to its original position via the restoring force of the spring 100, so that the orthogonal blocking surface of the blocking section 56 blocks the catch 98 of the top panel 90. The top panel 90 is thus secured to the locking bar 50. In assembly, the top panel 90 may be assembled prior to the side panel 80.

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In detachment, the operating block 70 is pushed downwardly to release the locking bars 50 from the side panel 80 and the top panel 90. Therefore, the side panel 80 and top panel 90 are readily detached from the base 10.

In addition, a lock can be used to lock the operating block 70 and the locking tab 27 of the rear panel 16, so as to forbidden an unauthorized person from open the side and top panels.

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

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【Description of the Drawings】

FIG. 1 is an exploded perspective view of a locking structure for a computer side panel and top panel in accordance with the present invention;

FIG. 2 is a perspective view of a computer base of the locking structure in accordance with the present invention;

FIG. 3 is a perspective view of a locking bar of the locking structure in accordance with the present invention;

FIG. 4 is an assembled perspective view of parts of the locking structure in accordance with the present invention;

FIG. 5 is an assembled perspective view of the locking structure in accordance with the present invention; and

FIG. 6 is an assembled view of the locking structure in accordance with the present invention, but viewed from another aspect.

【List of the Symbol of Component】

Computer base	10	bottom plate	12
Front plate	14	Rear plate	16
Side plate	18	Drive bracket	20
Locating hole	21	Bent flange	22, 30, 92
Fixing tab	24	Locking hole	25, 68, 72
opening	26	Locking tab	27
Locking slot	28, 52	Retaining tab	29
Exposed portion	31	Cutout	32
Bent portion	34, 40	aperture	36, 42
Sidewall	38	Locking bar	50
Arm portion	54	Blocking section	56
Connecting tab	62	Operating tab	66
Through hole	64	Operating block	70
Side panel	80	hook	82
Top panel	90	Nub	94
latch	96	catch	98
spring	100		

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Claims

1. A locking structure for computer top and side panels, comprising:
 - a computer base, comprising a rear plate, a bent flange bent from a side edge of the rear plate, a plurality of fixing tabs formed from the rear plate to define a sliding space therebetween, an opening and a plurality of locking slots being defined in the rear plate at the sliding space, a bent flange formed from a top edge of the rear plate, an exposed portion being defined in the bent flange corresponding to the sliding space;
 - a locking bar slidably attached in the sliding space of the rear panel, a plurality of locking slots defined in the locking bar corresponding to the locking slots of the rear plate, an arm portion formed from one end of the locking bar, a blocking section bent upwardly from a middle of the arm portion, an operating tab formed from the locking bar corresponding to the opening of the rear plate;
 - a side panel, a plurality of hooks formed from the side panel corresponding to the locking slots of the rear panel; and
 - a top panel, a catch formed from the top panel corresponding to the exposed portion of the rear plate.
2. The locking structure as recited in claim 1, wherein the locking bar connects with the base via a spring.
3. The locking structure as recited in claim 2, wherein a retaining tab is formed from the bent flange of the rear plate, a connecting tab is formed from the locking bar, the spring connects the retaining tab and the connecting tab.
4. The locking structure as recited in claim 1, wherein one side of the blocking section of the locking bar is an orthogonal blocking surface, the other side is an arch surface.
5. The locking structure as recited in claim 1, wherein the bent flange from the top edge of the rear plate defines two cutouts, two latches are formed from a rear edge of the top panel.
6. The locking structure as recited in claim 1, wherein the base further comprises a bottom plate, a front plate, a side plate and a drive bracket.
7. The locking structure as recited in claim 6, wherein a plurality of locking slots is defined in a side edge of the bottom plate opposite to the side plate and a bottom edge of a sidewall of the drive bracket.

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8. The locking structure as recited in claim 7, wherein a plurality of hooks is formed from the side panel corresponding to the locking slots of the bottom plate and the drive bracket.
9. The locking structure as recited in claim 6, wherein two locating holes are defined in an upper portion of the front plate, corresponding to two locating posts of the top panel.
10. The locking structure as recited in claim 6, wherein a bent portion is bent inwardly from a top edge of the side panel, a bent portion is bent inwardly from a top edge of a sidewall of the drive bracket, a plurality of aperture is defined in the bent portions.
11. The locking structure as recited in claim 10, wherein a rim is bent from each of opposite sides of the top panel, a plurality of nubs is formed inwardly from the rims corresponding to the apertures of the bent portions.
12. The locking structure as recited in claim 1 further comprising an operating block which is capable of being fixed to the operating tab of the locking bar.
13. The locking structure as recited in claim 12, wherein a locking hole is defined in each of the operating block and the operating tab.
14. The locking structure as recited in claim 13, wherein a locking tab is bent rearwardly from the rear panel at the opening, a locking hole is defined in the locking tab.

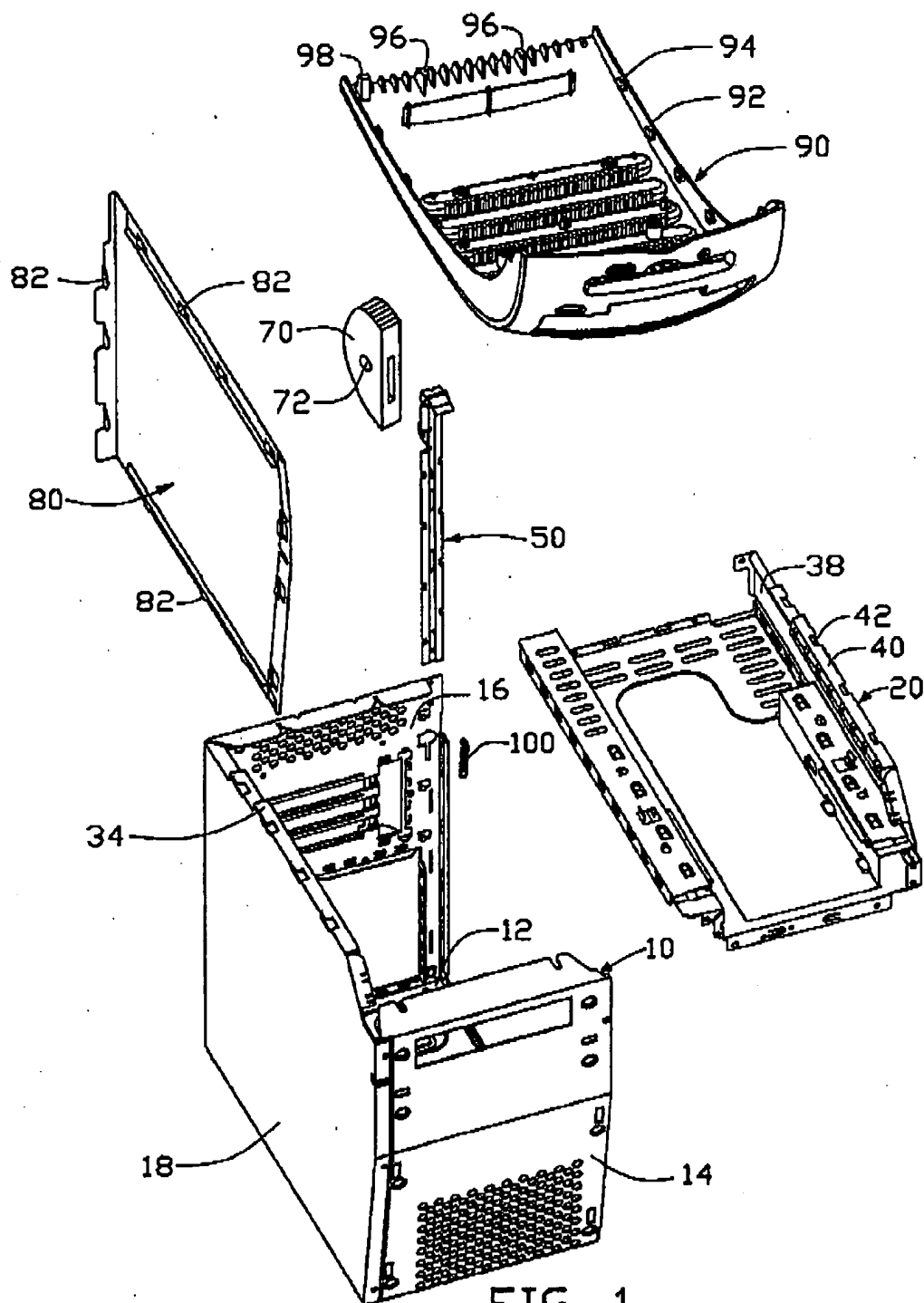
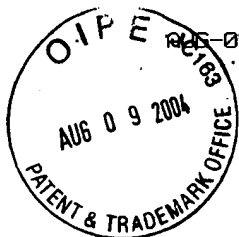


FIG. 1

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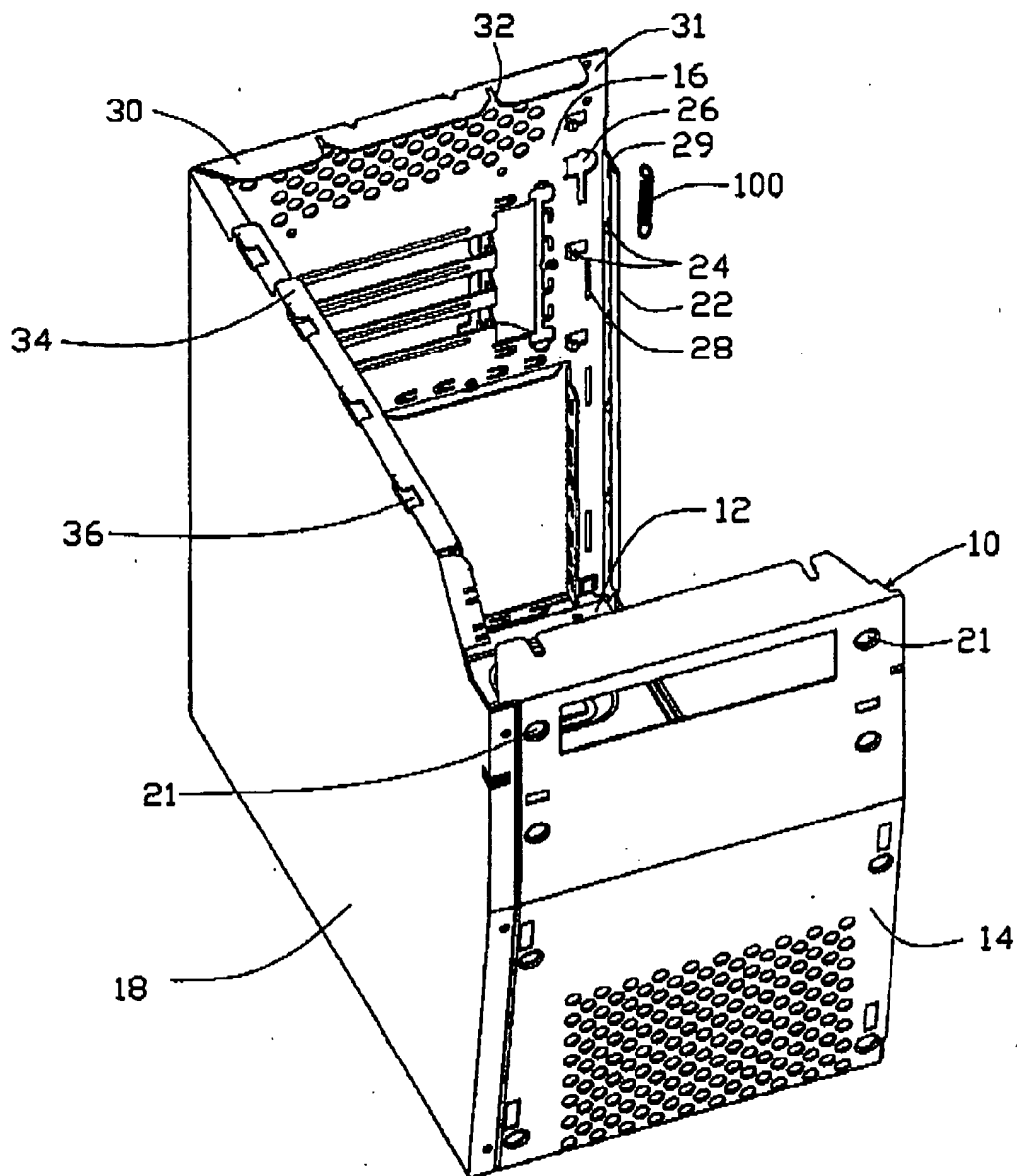


FIG. 2



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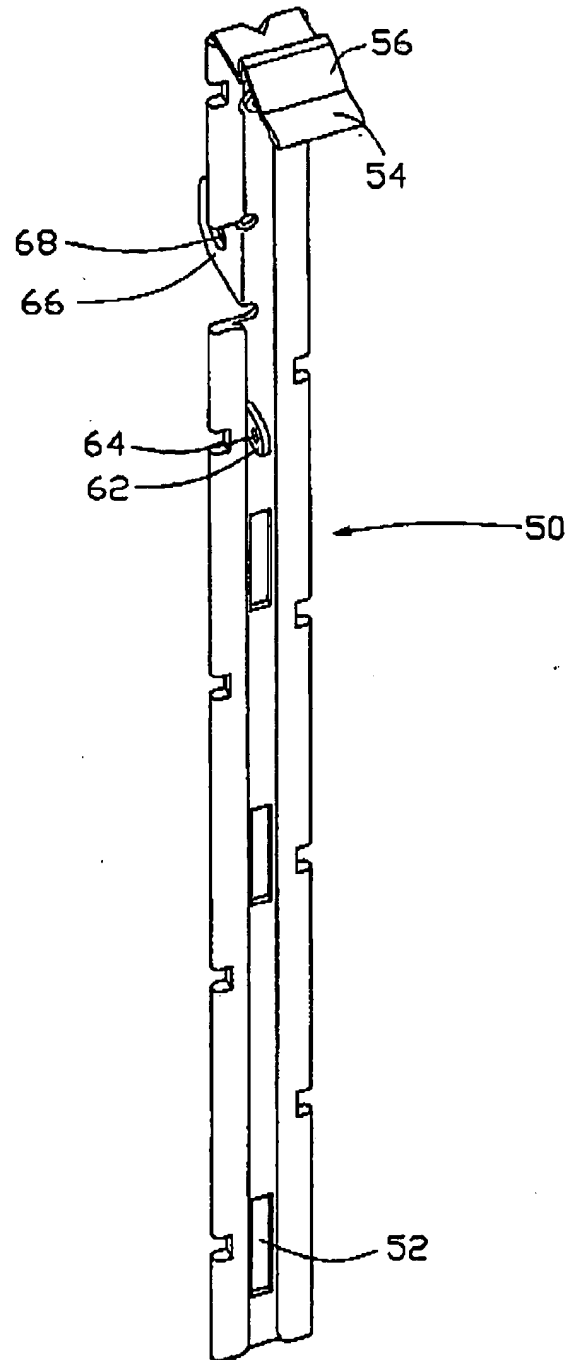


FIG. 3

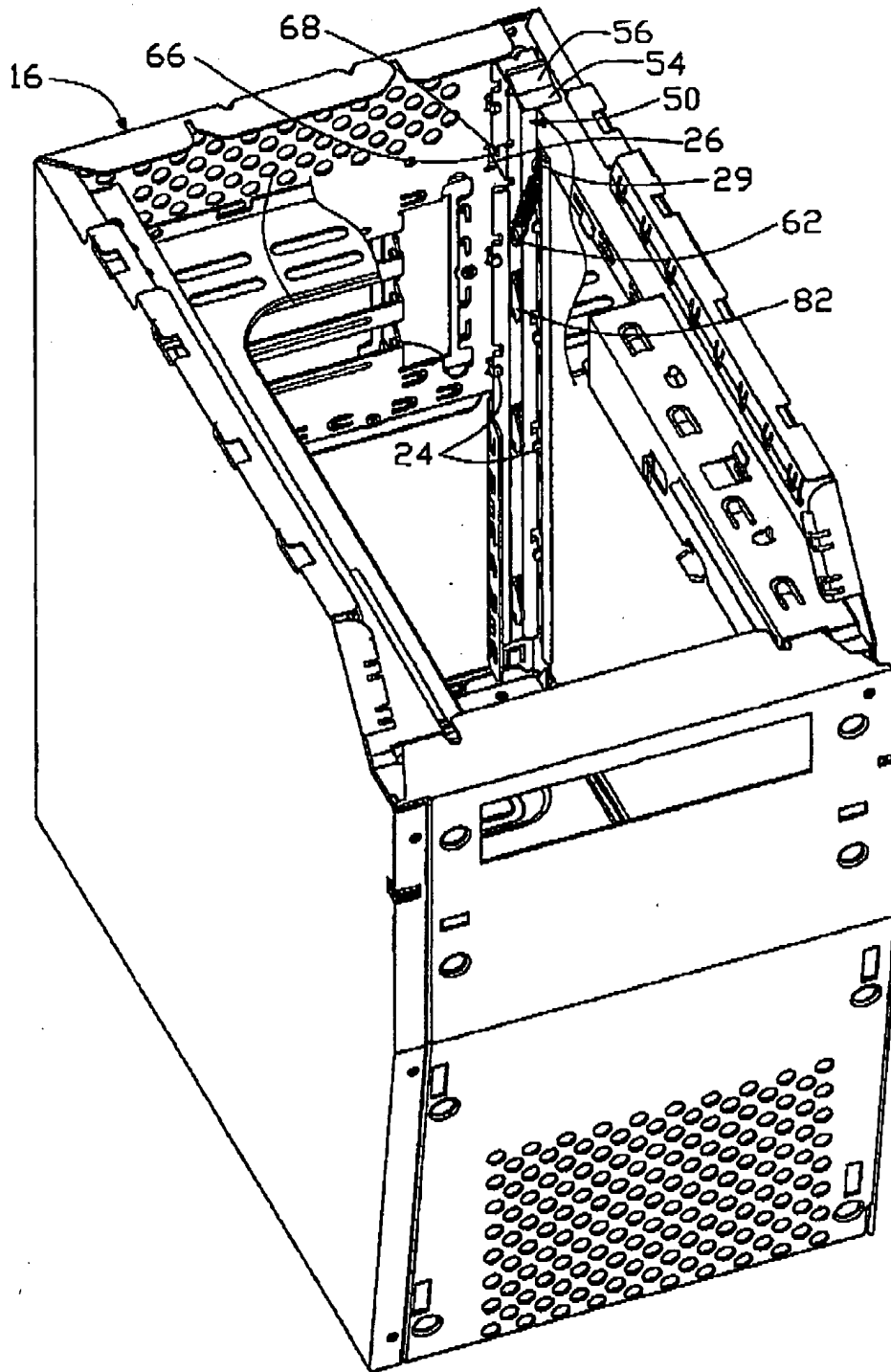
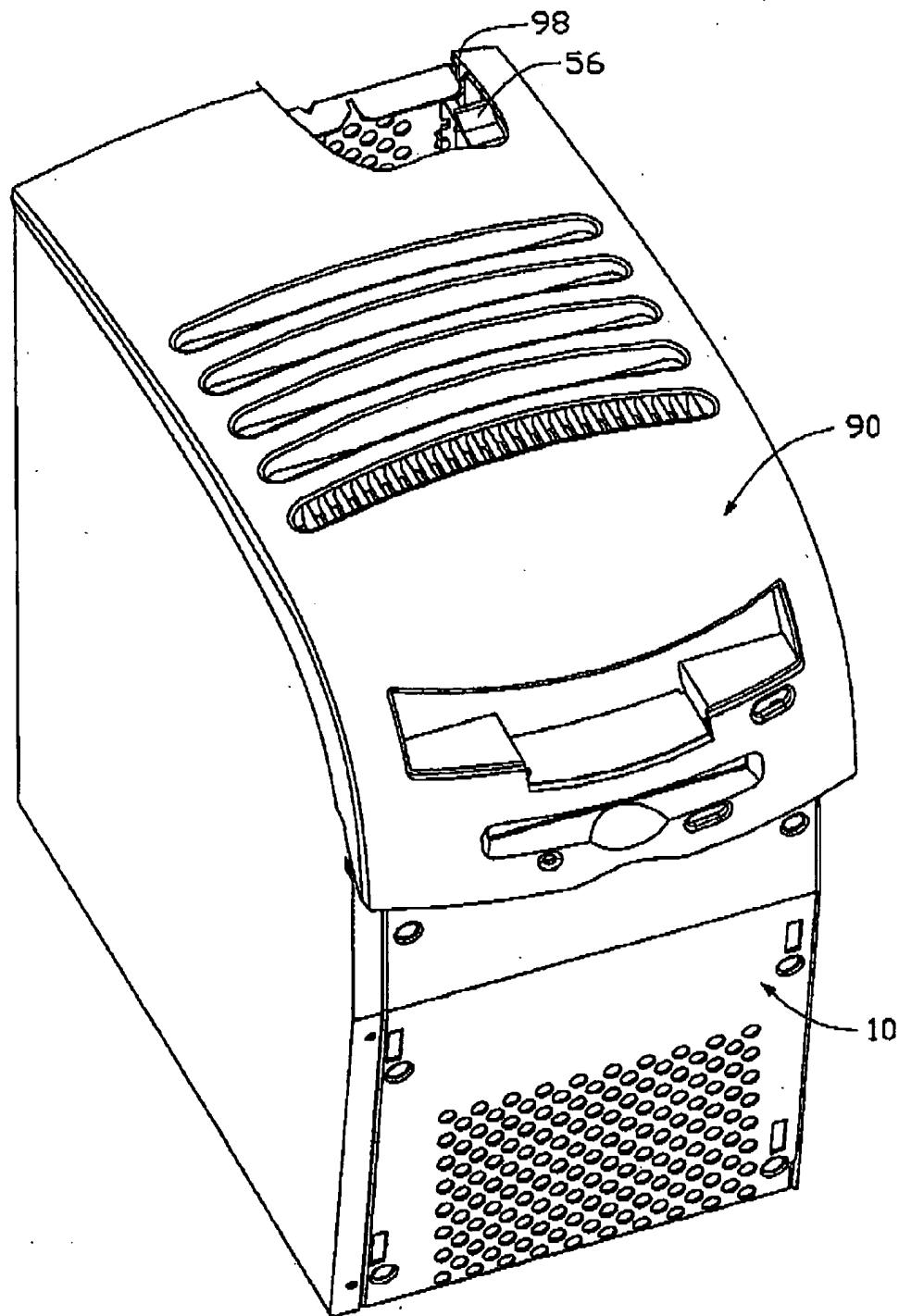


FIG. 4



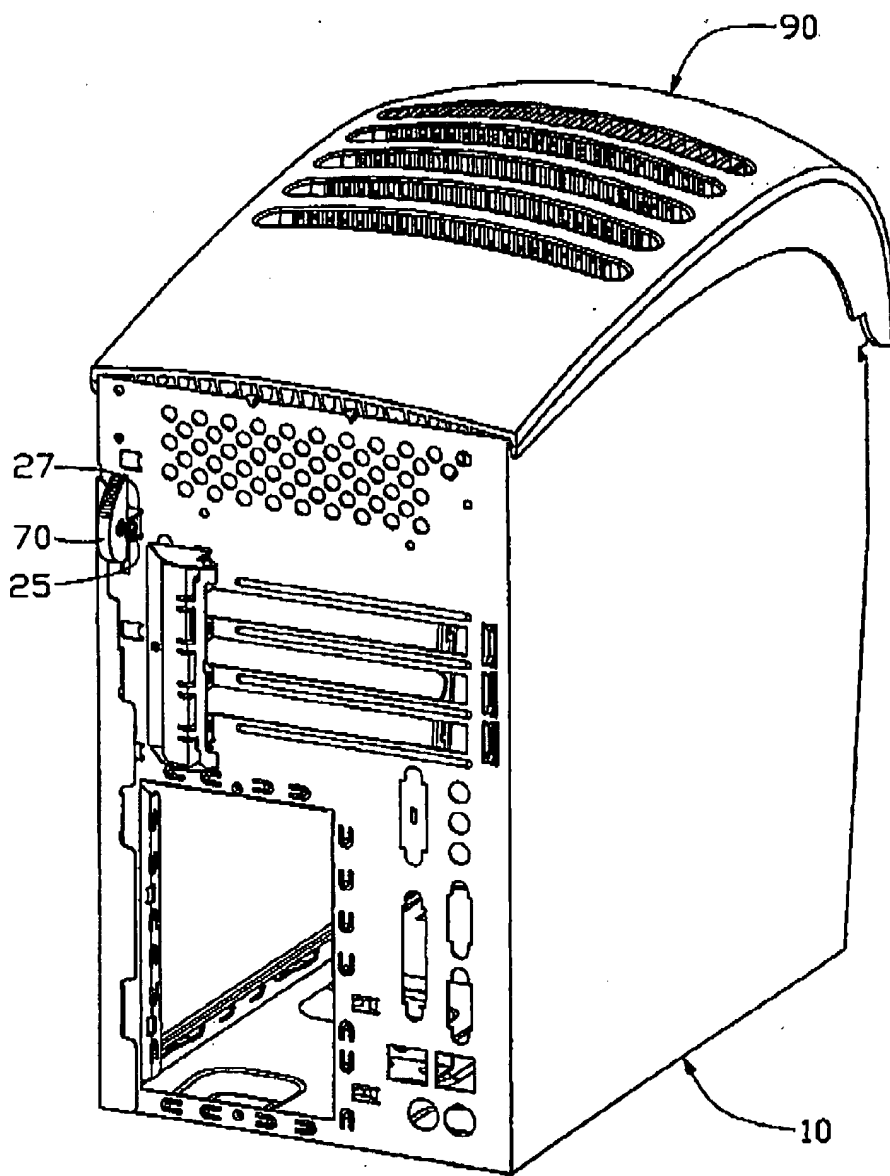


FIG. 6